

USPN 10/782,027, filed 2/19/2004
Reply Dated May 22, 2006

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Previously presented) A method of manufacturing an O temper aluminum alloy sheet in a continuous in-line sequence comprising the steps of:
 - (i) providing a continuously-cast aluminum alloy strip as feedstock;
 - (ii) quenching the feedstock with a quenching device to a temperature for feeding into a hot or warm rolling mill;
 - (iii) hot or warm rolling the feedstock; and
 - (iv) annealing the feedstock in-line to produce the O temper aluminum alloy.
2. (Cancelled)
3. (Previously presented) The method of Claim 1, further comprising tension leveling and coiling of the aluminum alloy sheet without requiring cold rolling prior to the leveling and the coiling of the aluminum alloy sheet.
4. (Original) The method to Claim 1, wherein the continuous cast aluminum alloy strip has a thickness of about 0.06-0.25 inches.
5. (Cancelled)
6. (Previously presented) The method of Claim 1, wherein the hot or warm rolling step (iii) is carried out at a temperature of about 400°F to 1020°F.
7. (Previously presented) The method of Claim 1, wherein the feedstock has a temperature of about 300°F to 850°F upon exit from the rolling in Step (iii).
8. (Previously presented) The method of Claim 1, wherein the quenching device is selected from the group consisting of a water spray device, an air jet device, or a combination thereof.
9. (Previously presented) The method of Claim 1, wherein the feedstock exists the quenching device at a temperature of about 400°F to 900°F.
10. (Previously presented) The method to Claim 1, wherein the thickness of the feedstock after the hot/warm rolling of Step (iii) is about 0.02-0.15 inches.

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11. (Previously presented) The method of Claim 1, wherein at Step (iv) the feedstock is annealed in-line at a temperature of about 700°F to 950°F.
12. (Previously presented) The method of Claim 11, wherein the annealing is carried out for a period of about 0.1 to 10 seconds.
13. (Previously presented) The method of Claim 11, further comprising quenching the feedstock after Step (iv) to a temperature of about 110° to 720°F.
14. (Cancelled)
15. (Original) The method of claim 11, wherein the aluminum sheet has a thickness of about 0.02-0.15 inches.

Claims 16-20 (cancelled)

21. (Original) The method of Claim 1, wherein said aluminum alloy is selected from the group consisting of 1XXX, 2XXX, 3XXX, 5XXX, 6XXX, 7XXX, and 8XXX series alloys.
22. (Previously presented) The method of Claim 21, further comprising the step of moving the continuously cast aluminum alloy strip through a trim station prior to quenching.
23. (Previously presented) The method of Claim 1, further comprising one or more rolling steps in addition of the rolling at Step (iii), prior to annealing in Step (iv).
24. (Previously presented) The method of Claim 23, further comprising one or more additional quenching steps between said rolling steps.
25. (Previously presented) The method of Claim 23, further comprising one or more heating steps between said additional rolling steps.

Claims 26-33 (Cancelled)

34. (Previously presented) The method of Claim 1, wherein the quenching of the feedstock in Step (ii) is to a temperature below 750°F.
35. (Previously presented) A method of manufacturing a T temper aluminum alloy sheet in a continuous in-line sequence comprising the steps of:
 - (i) providing a continuously-cast aluminum alloy strip as feedstock;

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- (ii) quenching the feedstock with a quenching device to a temperature for feeding into a hot or warm rolling mill;
- (iii) hot or warm rolling the feedstock; and
- (iv) solution heat treating the feedstock in-line to produce the T temper aluminum alloy.

36. (Previously presented) The method of Claim 35 further comprising tension leveling and coiling of the aluminum alloy strip.

37. (Original) The method to Claim 35, wherein the continuous cast aluminum alloy strip has a thickness of about 0.06-0.25 inches.

38. (Previously presented) The method of Claim 35, wherein the hot or warm rolling step (iii) is carried out at a temperature of about 400°F to 1020°F.

39. (Previously presented) The method of Claim 35, wherein the feedstock has a temperature of about 300°F to 850°F upon exit from the rolling in Step (iii).

40. (Previously presented) The method of Claim 35, wherein the quenching device is selected from the group consisting of a water spray device, an air jet device, or a combination thereof.

41. (Previously presented) The method of Claim 35, wherein the feedstock exists the quenching device at a temperature of about 400°F to 900°F.

42. (Previously presented) The method to Claim 35, wherein the thickness of the feedstock after the hot/warm rolling of Step (iii) is about 0.02-0.15 inches.

43. (Previously presented) The method of Claim 35, wherein at Step (iv) the feedstock is solution heat treated at a temperature of about 980°F to 1000°F.

44. (Previously presented) The method of Claim 35, wherein the solution heat treatment is carried out for a period of about 0.1 to 10 seconds.

45. (Previously presented) The method of Claim 35, further comprising quenching the feedstock after Step (iv) to a temperature of about 110° to 350°F.

46. (Previously presented) The method of Claim 35, further comprising one or more rolling steps in addition to the rolling at Step (iii), prior to solution heat treatment in Step (iv).

47. (Previously presented) The method of Claim 46, further comprising one or more additional quenching steps between said rolling steps.

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48. (Previously presented) The method of Claim 46, further comprising one or more heating steps between said additional rolling steps.

49. (Previously presented) The method of Claim 35, wherein the quenching of the feedstock in Step (ii) is to a temperature below about 750°F.

50. (Currently amended) A method of manufacturing an O temper aluminum alloy sheet without cold rolling in an in-line sequence comprising the steps of:

- (i) providing a thin cast aluminum alloy strip having a first thickness;
- (ii) quenching the strip with a quenching device;
- ~~[(ii)]~~ (iii) hot or warm rolling the strip in line to a final thickness, the rolling step
- ~~[(iii)]~~ (iv) retaining alloying elements substantially in solution;
- ~~[(iv)]~~ (v) annealing the strip, and
- ~~[(v)]~~ (vi) quenching the strip to a temperature of about 110 to 720°F to form an O temper.

51. (Cancelled)

52. (Previously presented) The method of Claim 50, further comprising tension leveling and coiling of the aluminum alloy sheet.

53. (Currently amended) The method of Claim 50, wherein the hot or warm rolling step ~~[(ii)]~~ (iii) is carried out at a temperature of about 400°F to 1020°F.

54. (Currently amended) The method of Claim 35, wherein the feedstock has a temperature of about 300°F to 850°F upon exit from the rolling in Step (iii).

55. (Previously presented) The method of Claim 54, wherein the annealing is carried out for a period of about 0.1 to 10 seconds.

56. (Previously presented) The method of Claim 50, wherein the quenching is performed with a quenching device.

57. (Currently amended) A method of manufacturing T temper aluminum alloy sheet without cold rolling in an in-line sequence comprising the steps of:

- (i) providing a thin cast aluminum alloy strip having a first thickness;
- (ii) quenching the strip with a quenching device;
- ~~[(ii)]~~ (iii) hot or warm rolling the strip in line to a final thickness, the rolling retaining alloying elements substantially in solution;
- ~~[(iii)]~~ (iv) solution heat treating the aluminum alloy strip, and

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[(iv)] (v) quenching the strip to a temperature of about 110-350°F to form a T temper

58. (Cancelled)

59. (Currently amended) The method of Claim 1 57, further comprising tension leveling and coiling of the aluminum alloy sheet to the tension leveling and the coiling of the aluminum alloy sheet.

60. (Currently amended) The method of Claim 1 57, wherein the hot or warm rolling in Step [(ii)] (iii) is carried out at a temperature of about 400° to 1020°F.

61. (Currently amended) The method of Claim 1 57, wherein at Step [(iii)] iv the feedstock is solution heat treated at a temperature of about 800° to 1020°F.

62. (Previously presented) The method of Claim 61, wherein the solution heat treatment is carried out for a period of about 0.1 to 10 seconds.

63. (Cancelled)

64. (Previously presented) The method of Claim 57, wherein said aluminum alloy is selected from the group consisting of 1XXX, 3XXX, 5XXX and 8XXX Series alloys.

65. (Previously presented) A method of manufacturing an O temper aluminum alloy sheet in a continuous in-line sequence comprising:

- (i) providing a continuously-cast aluminum alloy strip as feedstock;
- (ii) quenching the feedstock to a temperature at a rate greater than 5 Btu/hr ft²°F for feeding into a hot or warm rolling mill;
- (iii) hot or warm rolling the feedstock; and
- (iv) annealing the feedstock in-line to produce the O temper aluminum alloy sheet.

66. (Previously presented) A method of manufacturing a T temper aluminum alloy sheet in a continuous in-line sequence comprising:

- (i) providing a continuously-cast aluminum alloy strip as feedstock;
- (ii) quenching the feedstock with an in-line quenching device to a temperature at a rate greater than 5 Btu/hr ft²°F for feeding into a hot or warm rolling mill;
- (iii) hot or warm rolling the feedstock; and
- (iv) solution heat-treating the feedstock in-line to produce the T temper aluminum alloy sheet.